

**Importation of Lettuce (*Lactuca sativa*)
from Colombia
into the United States**

Qualitative, Pathway-Initiated Pest Risk Assessment

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A. Introduction

Pest risk analysis as defined by Food and Agriculture Organization (FAO) of the United Nations includes pest risk assessment and pest risk management. This document deals only with the pest risk assessment (PRA).

This PRA was prepared by APHIS, USDA to estimate the risk of introducing plant pests associated with importation of **lettuce** (*Lactuca sativa*) from **Colombia** into the United States. The estimates of risk are expressed qualitatively ("high", "medium" or "low"), rather than in numerical terms such as probabilities or frequencies. The detailed method of risk assessment can be found in the document: Pathway-Initiated Pest Risk Assessment: Guidelines for Qualitative Assessments (USDA, 1995) (available from the Internet at <http://www.aphis.usda.gov/ppq/bats/bant> or from the agency contact listed on front page of this document). Authority for APHIS to regulate plant pests/plant products is derived from the Plant Quarantine Act of 1912, the Plant Pest Act of 1957, the Noxious Weed Act of 1974 and the Code of Federal Regulations, Title 7, Part 319, Subpart 56 (7 CFR 319.56 - Fruits and Vegetables). The methods and terminology used to initiate, conduct, and report this PRA are consistent with guidelines provided by FAO (1996) and NAPPO (1996).

B. Risk Assessment

1. Initiating Event: Proposed Action

This commodity-based, pathway-initiated, PRA was conducted to assess the risk associated with lettuce from Colombia. Lettuce is currently permitted entry into the United States from Colombia. The previous pest risk assessment is outdated and this PRA updates our knowledge and meets the requirements of international standards.

2. Assessment of Weediness Potential of *Lactuca sativa*

The results of the weediness screening for *Lactuca sativa* (Table 1) did not prompt a pest-initiated risk assessment.

Table 1: Process for Determining Weediness Potential of Commodity

Commodity: *Lactuca sativa* L. (Asteraceae)

Phase 1: Consider whether the genus is new to or not widely prevalent in the United States (exclude plants grown under USDA permit in approved containment facilities)
Lactuca sativa L. (lettuce) is widely cultivated in the United States.

Phase 2: Answer Yes or No to the following questions:
 Is the genus or species listed as a weed in:

NO Geographical Atlas of World Weeds (Holm *et al.*, 1979) or World Weeds: Natural Histories and Distribution. (Holm *et al.*, 1997)

NO World's Worst Weeds (Holm *et al.*, 1977)

NO Report of the Technical Committee to Evaluate Noxious Weeds; Exotic Weeds for Federal Noxious Weed Act (Gunn and Ritchie, 1982)

NO Economically Important Foreign Weeds (Reed, 1977)

NO Weed Science Society of America list (WSSA, 1989)

NO Is there any literature reference indicating weediness (e.g., AGRICOLA, CAB, Biological Abstracts, AGRIS; search on "species name" combined with "weed").

Phase 3: Conclusion:

IF: 1. The species is widely prevalent in the United States and the answer to all of the questions is **no**...

Proceed with the pest risk assessment.

3. Previous Risk Assessments, Decision History for *Lactuca sativa* from Central and South America

1993- Permit entry subject to inspection from Nicaragua.
 1986- Permit entry subject to inspection from Peru.
 1979- Permit entry subject to inspection from Chile.
 1973- Permit entry subject to inspection from Brazil.
 1972- Permit entry into all North Atlantic ports from Venezuela.
 1968- Permit entry into North Atlantic, South Atlantic, and Gulf ports from Colombia.

4. Pest list: Plant pests associated with *Lactuca sativa* From Colombia or South America

Table 2 shows our pest list for *Lactuca sativa* from Colombia or South America. We generated the list after review of the information sources listed in USDA (1995). The pest list includes potential pests associated with the plant species (as opposed to only the plant part to be shipped). The pest list includes limited information on the distribution of each pest, pest-commodity association, and regulatory history. Not all pests listed in Table 2 are specifically reported from Colombia. For those pests listed below whose listed distribution does not specifically include Colombia (CO), records exist for surrounding countries and we considered it reasonable that the pest may also occur in Colombia.

Table 2: Pests associated with *Lactuca sativa* from Colombia or South America

Scientific name	Dist. ¹	Codes ²	References
ARTHROPODS			
Agromyzidae, species of (Diptera)	CO	b	USDA, 1997
<i>Agrotis epsilon</i> Hufnagel (Lepidoptera:Noctuidae)	CO,US	c,o	Carter, 1984; CIE, 1969a ; CPC, 1997; Zhang, 1994
<i>Agrotis malefida</i> Guenée (Lepidoptera:Noctuidae)	CO,US	c,o	CPC, 1997; Zhang, 1994
<i>Agrotis repleta</i> Walker (Lepidoptera:Noctuidae)	SA,US	c,o,v	CPC, 1997; Hodges <i>et al.</i> , 1983; Saunders <i>et al.</i> , 1983
<i>Amauromyza maculosa</i> (Malloch) (Diptera:Agromyzidae)	SA,US	o,v	CPC, 1997; EPPO, 1996; Hill, 1987; Spencer, 1990
<i>Anthonomus</i> sp. (Coleoptera:Curculionidae)	CO	b	USDA, 1997
Aphididae, species of (Homoptera)	CO	b	USDA, 1997

Table 2: Pests associated with *Lactuca sativa* from Colombia or South America

Scientific name	Dist. ¹	Codes ²	References
<i>Aphis fabae</i> Scopoli (Homoptera:Aphididae)	SA,US	c,o	Blackman and Eastop, 1985; CIE, 1963
<i>Aphis gossypii</i> Glover (Homoptera:Aphididae)	CO,US	c,o	CIE, 1968; Hill, 1987; Metcalf and Metcalf, 1993
<i>Aphis spiraecola</i> Patch (Homoptera:Aphididae)	CO,US	c,o	Blackman and Eastop, 1985; CIE, 1969c
<i>Araecerus fasciculatus</i> (De Geer) (Coleoptera: Anthribidae)	CO,US	c, k,o	CPC, 1997
<i>Ascia monuste</i> Linnaeus (Lepidoptera:Pieridae)	SA,US	o, v	CPC, 1997; Saunders <i>et al.</i> , 1983; Zhang, 1994
<i>Aulacorthum solani</i> (Kaltenbach) (Homoptera:Aphididae)	CO,US	c,o	Blackman and Eastop, 1985; CIE, 1985c; CPC, 1997
<i>Bemisia tabaci</i> (Gennadius) (Homoptera:Aleyrodidae)	CO,US	c,o	CPC, 1997; IIE, 1986b
<i>Brevicoryne brassicae</i> (L.) (Homoptera:Aphididae)	CO,US	c,o	Apablaza, 1984; CPC, 1997; IIE, 1992;
<i>Chromatomyia syngenesiae</i> Hardy (Diptera:Agromyzidae)	CO,US	o	CPC, 1997; Hill 1987; IIE, 1987
<i>Chrysodeixis includens</i> Walker (Lepidoptera>Noctuidae)	CO,US	o	Condor, 1973; CPC, 1997; Zhang, 1994;
<i>Conchyloides ovulalis</i> (Guenee) (Lepidoptera:Pyralidae)	CO,US	c,k,o	CPC, 1997; Hodges <i>et al.</i> , 1983
<i>Copitarsia</i> sp. (Lepidoptera>Noctuidae)	CO	b	USDA, 1997
<i>Delia platura</i> (Meigen) (Diptera:Anthomyiidae)	CO,US	c,o	CIE, 1985a; CPC, 1997
<i>Diabrotica balteata</i> LeConte (Coleoptera:Chrysomelidae)	CO,US	c,o	Blackwelder, 1944; Poole and Gentili, 1996; Saunders <i>et al.</i> , 1983;
<i>Diabrotica decempunctata</i> Latreille. (Coleoptera:Chrysomelidae)	CO	e	Blackwelder, 1944; Condor, 1973
<i>Diabrotica speciosa</i> Vigns (Coleoptera:Chrysomelidae)	SA	e,n,v	Condor, 1973;
<i>Diabrotica viridula</i> F. (Coleoptera:Chrysomelidae)	CO,US	c,e,o	Blackwelder, 1944; Saunders <i>et al.</i> , 1983; Wilcox, 1975
<i>Epitrix cucumeris</i> (Harris) (Coleoptera:Chrysomelidae)	CO,US	o	EPPO, 1996, Revelo, 1968

Table 2: Pests associated with *Lactuca sativa* from Colombia or South America

Scientific name (Lepidoptera:Arctiidae)	Dist. ¹ CO,US	Codes ² c,o	References Zhang, 1994
<i>Feltia subterranea</i> Fabricius (Lepidoptera:Noctuidae)	SA,US	o,v	Gonzalez, 1989; Zhang, 1994
<i>Frankliniella occidentalis</i> (Pergande) (Thysanoptera:Thripidae)	CO,US	c,o	Bailey, 1957; IIE, 1993c
<i>Frankliniella</i> sp. (Thysanoptera:Thripidae)	CO	b	USDA, 1997
<i>Graphognathus leucoloma</i> (Bocheman) (Coleoptera:Curculionidae)	SA,US	c,o,v	CIE, 1964b; CPC, 1997; Spiller and Wise 1982
<i>Helicoverpa zea</i> Boddie (Lepidoptera:Noctuidae)	CO,US	c,o	EPPO, 1996; IIE, 1993b
<i>Heliothis virescens</i> Fabricius (Lepidoptera:Noctuidae)	CO,US	c,o	CPC, 1997; IIE, 1993a; Zhang, 1994
<i>Hellula phidilealis</i> Walker (Lepidoptera:Pyralidae)	CO,US	c,o	CIE, 1964a; CPC, 1997; Saunders et al., 1983; Zhang, 1994
<i>Leptophobia aripa</i> Boisduval (Lepidoptera:Pieridae)	SA	n ,v	McGuire and Crandall, 1967; Zhang, 1994
<i>Liriomyza huidobrensis</i> (Blanchard) (Diptera:Agromyzidae)	CO,US (CA,HI,TX, UT,WA)	g,n, z	EPPO, 1996; Hill, 1987; Lightfield, 1997
<i>Liriomyza sativae</i> Blanchard (Diptera:Agromyzidae)	CO,US	c,o	IIE, 1986a; Hill, 1987
<i>Liriomyza trifolii</i> (Burgess) (Diptera:Agromyzidae)	CO,US	c,o	CIE, 1983; CPC, 1997
<i>Macrosiphum euphorbiae</i> (Thomas) (Homoptera:Aphididae)	CO,US	c,o	CIE, 1954; CPC, 1997
<i>Mythimna unipuncta</i> Haworth (Lepidoptera:Noctuidae)	CO,US	o	CIE, 1967; UC-IPM, 1995.; Zhang, 1994
<i>Myzus persicae</i> (Sulzer) (Homoptera:Aphididae)	CO,US	c,o	CIE, 1979 ; CPC, 1997
Noctuidae, species of (Lepidoptera)	CO	b	USDA, 1997
<i>Omiodes indicata</i> (Fabricius) (Lepidoptera:Pyralidae)	CO,US	k,o	CPC, 1997; Hodges et al., 1983
<i>Peridroma saucia</i> Hübner (Lepidoptera:Noctuidae)	CO,US	c,o	Carter, 1984; CPC, 1997; Zhang, 1994

Table 2: Pests associated with *Lactuca sativa* from Colombia or South America

Scientific name	Dist. ¹	Codes ²	References
<i>Saissetia coffeae</i> (Walker) (Coccoidea :Homoptera)	CO,US	c,k,o	CPC, 1997
<i>Solenopsis geminata</i> (Fabricius) (Hymenoptera:Formicidae)	CO,US	c,o	CIE, 1958; CPC, 1997; Saunders et al., 1983
<i>Spanagonicus provincialis</i> (Hemiptera:Miridae)	SA	v	Condor, 1973
<i>Spodoptera eridania</i> (Cramer) (Lepidoptera:Noctuidae)	SA,US	c,o,v	Saunders et al., 1983; Zhang, 1994
<i>Spodoptera frugiperda</i> J.E. Smith (Lepidoptera:Noctuidae)	CO,US	c,o	CIE, 1985b; Saunders et al., 1983; Zhang, 1994
<i>Spodoptera latifascia</i> Walker (Lepidoptera:Noctuidae)	CO,US	c,o	CPC, 1997 ; Revelo, 1968; Zhang, 1994
<i>Spodoptera ornithogalli</i> Guenée (Lepidoptera:Noctuidae)	CO,US	c,o	CIE, 1977; Zhang, 1994
<i>Thrips tabaci</i> Lindeman (Thysanoptera:Thripidae)	CO,US	c,o	CIE, 1969b ; Spiller and Wise 1982
<i>Trialeurodes vaporariorum</i> (Westwood) (Homoptera:Aleyrodidae)	CO,US	c,o	Mound and Halsey, 1978
<i>Trichoplusia ni</i> Hübner (Lepidoptera:Noctuidae)	CO,US	c,o	CIE, 1974; CPC, 1997; Zhang, 1994
<i>Uroleucon ambrosia</i> (Thomas) (Homoptera:Aphididae)	SA,US	o	Blackman and Eastop, 1985
MOLLUSC			
<i>Otala lactea</i> (Muller) (Mollusca:Helicidae)	CO,US	c,o	CPC, 1997; FAO, 1993
PATHOGENS			
BACTERIA			
<i>Agrobacterium tumefaciens</i> (Smith & Town.) Conn.	CO,US	c,o	FAO, 1993; CPC, 1997
<i>Erwinia carotovora</i> (L.R. Jones) Holl.	SA,US	c,o, v	Bradbury, 1986; Wellman, 1977
<i>Pseudomonas cichorii</i> (Swingle) Stapp	SA,US	o, v	Bradbury, 1986; Persley, 1994
<i>Pseudomonas marginalis</i> pv. <i>marginalis</i> (Brown) Stevens	SA,US	o, v	Bradbury, 1986; FAO, 1993

Table 2: Pests associated with *Lactuca sativa* from Colombia or South America

Scientific name	Dist. ¹	Codes ²	References
<i>Xanthomonas campestris</i> pv. <i>vitians</i> (Brown) Dye	SA,US	c,o,v	Bradbury, 1986; CPC, 1997; Pennycook, 1989
FUNGI			
<i>Alternaria alternata</i> (Fr.:Fr.) Keissl. (Fungi Imperfecti:Hyphomycetes)	SA,US	c,o,v	Farr et al., 1989; CPC, 1997; Salah and Hussein, 1995
<i>Alternaria brassicae</i> (Berk.) Saac. (Fungi Imperfecti:Hyphomycetes)	CO,US	c,o	CMI, 1984; CPC, 1997
<i>Athelia rolfsii</i> (Curzi) Tu & Kimbrough (Basidiomycetes: Aphylophorales)	CO,US	o	Farr et al., 1989; CPC, 1997; Snowdon 1991
<i>Botrytis cinerea</i> Pers.:Fr. (Fungi Imperfecti: Hyphomycetes)	SA,US	c,o,v	Farret et al., 1989; CPC, 1997
<i>Bremia lactucae</i> Regel (Oomycetes: Peronosporales)	SA,US	c,o,v	CMI, 1969 ;CPC, 1997; Farret et al., 1989
<i>Corynespora cassiicola</i> (Berk. & Curt.) Wei (Fungi Imperfecti: Hyphomycetes)	SA,US	c,o,v	CPC, 1997; Dingley et al. 1981; Farr et al., 1989
<i>Erysiphe cichoracearum</i> DC. (Pyrenomycetes: Erysiphales)	CO,US	c,o	CMI 1967a; Farr et al., 1989; Wellman, 1977
<i>Microdochium panattonianum</i> (Berl.) Sutton, Galea & Price (Fungi Imperfecti: Hyphomycetes)	SA,US	o,v	Farr et al., 1989; Wellman, 1977
<i>Olidium brassicae</i> (Woronin) P.A. Dang. (Chytridiomycetes: Chytridiales)	CO,US	o	Farr et al., 1989; FAO, 1993
<i>Phytophthora cryptogea</i> Pethybr. & Lafferty (Oomycetes: Peronosporales)	SA,US	o,v	CPC, 1997; CMI, 1985; FAO, 1993; Farr et al., 1989
<i>Pleospora herbarum</i> (Pers.:Fr.) Rabenh. (Ascomycete)	SA,US	c,o,v	CMI, 1967b; Farr et al., 1989; Wellman, 1977;
<i>Rhizoctonia solani</i> Kuhn (Agonomycetes)	SA,US	c,o,v	CPC, 1997; Farr et al., 1989, Snowdon 1991
<i>Sclerotinia sclerotiorum</i> (Lib.) de Bary (Ascomycete)	CO,US	c,o	CMI, 1976; CPC, 1997; Farr et al., 1989
<i>Septoria lactucae</i> Pass. (Fungi: Imperfecti: Coelomycetes)	CO,US	c,o	CMI, 1972; CPC, 1997; Farr et al., 1989
NEMATODES			
<i>Aphelenchoides parietinus</i> Stin. (Nematoda: Aphelenchoididae)	SA,US	e,o,v	Anonymous, 1984; Wellman, 1977

Table 2: Pests associated with *Lactuca sativa* from Colombia or South America

Scientific name	Dist. ¹	Codes ²	References
<i>Helicotylenchus nannus</i> Stein. (Nematoda:Hoplolaimidae)	SA,US	c, e,o,v	Thorne, 1961; Wellman, 1977
<i>Longidorus</i> spp. (Nematoda:Longidoridae)	CO,US	e,o	CPC, 1997
<i>Meloidogyne arenaria</i> (Neal) Chitwood (Nematoda:Meloidogynidae)	SA,US	c,e,o,v	Williams, 1975
<i>Meloidogyne exigua</i> Goeldi (Nematoda:Meloidogynidae)	CO	a,e	FAO, 1993; Wellman, 1977
<i>Meloidogyne hapla</i> Chitwood (Nematoda:Meloidogynidae)	SA,US	e,c,o,v	Evans <i>et al.</i> , 1993; Williams, 1974
<i>Meloidogyne incognita acrita</i> Chitwood (Nematoda:Meloidogynidae)	SA,US	c,e,o,v	Luc <i>et al.</i> , 1990; Williams, 1973
<i>Meloidogyne javanica</i> (Treub) Chitwood (Nematoda:Meloidogynidae)	CO,US	c,e,o	Evans <i>et al.</i> , 1993; Williams, 1972
<i>Nacobbus aberrans</i> Thorne & Allen (Nematoda:Nacobidae)	SA,US	c,e,o,v	Anonymous, 1984; EPPO, 1996
<i>Rotylenchus reniformis</i> Linford & Oliveira (Nematoda:Hoplolaimidae)	CO,US	c,e,o	FAO, 1993
<i>Trichodorus</i> spp. (Nematoda:Trichodoridae)	CO,US	e,o	CPC, 1997
VIRUSES AND VIRUSLIKE AGENTS			
Alfalfa mosaic alfamovirus	CO,US	o	CPC, 1997; EPPO, 1996
Aster yellows phytoplasma	CO,US	o	EPPO, 1996; FAO, 1993
Lettuce mosaic potyvirus	SA,US	o,v	FAO, 1993; FAO, 1993; Wellman, 1977
Tobacco streak ilarvirus	CO,US	o	FAO, 1993; Wellman, 1977
Tomato spotted wilt tospovirus	SA,US	o,v	EPPO, 1996; FAO, 1993; Wellman, 1977

¹Geographical distribution is denoted as follows: CA- California, CO- Colombia, HI- Hawaii, SA- South America, TX- Texas, US- United States, UT- Utah, WA- Washington

²Codes: a - Pest mainly associated with plant part other than commodity
b - Listed in the USDA catalog of intercepted pests as actionable
c - Listed in non-reportable dictionary as non-actionable.
e - Although pest attacks commodity, it would not be expected to remain with the commodity (plant part) during processing

- g - Quarantine pest; pest has limited distribution in the U.S. and is under official control as follows: pest listed by name in USDA's pest dictionary, official quarantine action may be taken on this pest when intercepted on this commodity.
- k - Not specifically listed for host, but reported from other hosts in same plant genus/family.
- n - Listed in the USDA catalogue of intercepted pests as actionable.
- o - Organism does not meet the geographical and regulatory definition for a quarantine pest.
- v - No specific reports of the pest from PRA area, but regional report exist and the pest may be present in the PRA area.
- z - Internal feeder: Pest is known to attack or infect commodity and it would be reasonable to expect the pest may remain with the commodity during processing and shipping

5. List of Quarantine Pests

The list of quarantine pests for commercial shipments of *Lactuca sativa* from Colombia is provided in Table 3. Should any of these pests be intercepted on commercial (or any other) shipments of *Lactuca sativa*, quarantine action may be taken.

Table 3. Quarantine Pests - <i>Lactuca sativa</i> from Colombia	
Arthropods	
<i>Diabrotica decempunctata</i> Latreille. (Coleoptera:Chrysomelidae)	
<i>Liriomyza huidobrensis</i> (Blanchard) (Diptera:Agromyzidae)	
NEMATODES	
<i>Meloidogyne exigua</i> Goeldi	

6. Quarantine Pests Likely to Follow Pathway

We analyzed in detail only those quarantine pests that can reasonably be expected to follow the pathway, i.e., be included in commercial shipments of *Lactuca sativa* (see USDA, 1995 for selection criteria). Only quarantine pests selected for further analysis are subjected to steps 7-9 below.

Table 4. Quarantine Pests Selected for Further Analysis with - <i>Lactuca sativa</i> from Colombia	
Arthropods	
<i>Liriomyza huidobrensis</i> (Blanchard) (Diptera:Agromyzidae)	

Other organisms in this Assessment, not chosen for further scrutiny, may be potentially detrimental to the agricultural production systems of the United States. However, there were a variety of reasons for not subjecting them to further analysis, e.g., they may be associated with the commodity (however, it was not considered reasonable to expect these pests to remain with the commodity during processing); they have been intercepted, as biological

contaminants, by PPQ Officers during inspections of these commodities and would not be expected to be found with every shipment. Usually, the biological hazard of organisms identified only to the generic level are not assessed due to the lack of adequate biological/taxonomic information. This lack of biological information on any given insect or pathogen should not be equated with low risk. By necessity, pest risk assessments focus on those organisms for which biological information is available. By developing detailed assessments for known pests that inhabit a variety of niches on the parent species, i.e. on the surface of or within the bark/wood, on the foliage, etc., effective mitigation measures can be developed to eliminate the known organism and any similar unknown ones that inhabit the same niches.

7. Economic Importance: Consequences of Introduction

Pests rated for potential economic importance are evaluated using five biological criteria referred to here as Risk Elements (RE). (USDA, 1995). The cumulative (Total) score for Risk Elements 1-5 is considered to be a biological indicator of the potential destructiveness of the pest. Each RE rating is specific to each pest regardless of its association with the commodity. Our ratings for these five RE's are shown in Table 5.

Table 5: Risk Rating - Consequences of Introduction

Pest	Climate/ Host	Host Range	Dispersal	Economic	Environ- mental	Total score	Risk Rating
<i>Liriomyza huidobrensis</i>	High(3)	High(3)	Medium(2)	Medium(2)	High(3)	13	High

8. Likelihood of Introduction

To rate each pest with respect to introduction potential, we consider two separate elements. First element, we estimate the amount of commodity likely to be imported. More imports lead to greater risk. Second element, we consider five biological features concerning pest-commodity interactions. The resulting risk ratings are specific to each pest-commodity combination. The cumulative risk rating for introduction is considered to be an indicator of the likelihood that a particular pest would be introduced. Our ratings for these elements are shown in Table 6.

Table 6: Risk Rating - Likelihood of Introduction (RE #6 and #7)

Pest	Amount of commodity shipped	Likelihood of surviving postharvest treatment	Likelihood of surviving shipment	Likelihood of not being detected at port of entry	Likelihood of moving to suitable habitat	Likelihood of finding suitable hosts	Total score	Risk Rating
<i>Liriomyza huidobrensis</i>	Low(1)	High(3)	High(3)	Low(1)	Medium(2)	Medium(2)	12	Medium

9. Conclusion: Pest Risk Potential (PRP) and Phytosanitary Measures

The overall risk posed by a particular pest depends on both the consequences and likelihood of introduction (USDA, 1995). PRP is the combination of the consequences and likelihood of introductions risk rating (Tables 5 and 6). Our rating of the overall PRP for each quarantine pest selected for further analysis is shown in Table 7. (USDA, 1995).

Table 7: Pest Risk Potential

Pest	Consequences of Introduction risk rating	Likelihood of Introduction risk rating	Total score	Pest Risk Potential (PRP)
<i>Liriomyza huidobrensis</i>	High(3)	Medium(2)	5	High

Plant pests rated as high for PRP may require specific phytosanitary measures. However detailed examination and choice of appropriate sanitary and phytosanitary measures to mitigate pest risk for particular pests are addressed as part of the pest risk management phase and are not discussed here.

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